REMARKS

Claims 1-4, 6-11 and 13-19 are pending in this application.

By this Amendment, independent claims 1 and 13 are amended for clarity and to recite additional features disclosed in the specification at, for example, page 4, line 32 - page 5, line 15; and page 7, lines 18-22. Claim 5 is canceled to avoid redundancy. Claim 12 also is canceled. Claims 9 and 14 are amended to depend from claims other than claim 5. Claim 2 is amended for antecedent basis. Claim 15 is amended as the Examiner suggested. Claims 17 and 18 are added to recite additional features disclosed in the specification at, for example, page 4, line 19 - page 5, line 12. Claim 19 is added to recite the subject matter of cancelled claim 12.

No new matter is added. Reconsideration of the application is respectfully requested.

The Examiner is respectfully requested to acknowledge consideration of the references submitted with the Information Disclosure Statement concurrently filed herewith.

The Office Action objects to claims 1, 13 and 15. Claims 1, 13 and 15 are amended to overcome this objection. Accordingly, withdrawal of the objection to claims 1, 13 and 15 is respectfully requested.

The Office Action objects to the drawings, asserting that certain features recited in the claims are not shown in the drawings. Claims 1 and 13 are amended to overcome this objection. Accordingly, withdrawal of the objection to the drawings is respectfully requested.

The Office Action rejects claims 1-15 under 35 U.S.C. §103(a) over U.S. Patent No. 4,974,165 to Locke in view of U.S. Patent No. 6,519,860 to Bieg and further in view of U.S. Patent Application Publication No. 2003/0061857 to Keller; and rejects claim 16 under 35 U.S.C. §103(a) over Locke, Bieg and Keller and further in view of U.S. Patent No. 6,539,642 to Moriyasu. These rejections are moot with regard to canceled claims 5 and 12, and are respectfully traversed with regard to the remaining claims 1-4, 6-11 and 13-16.

I.   The "Recording" Feature

Claim 1 recites "a first system recording a first data set" and "a second system,

independent to the first system, recording a second data set." Claim 13 recites a similar

"recording" feature. The Office Action asserts that Locke discloses the "recording" feature at

col. 5, lines 11-16. See the Office Action at the bottom of page 7 and the top of page 8.

However, this assertion is not supported by Locke.

Col. 5, lines 10-58 and col. 6, lines 27-40 of Locke disclose a method of in-process

part inspection which comprises, during machining, monitoring the output of the Z-axis

position scale 49. When the output coincides with a predetermined value, a latch signal is

sent so that measurement information from all the sensors (e.g., the dimensional measuring

unit 46) is taken. If there is a difference between the measurement information (e.g. from the

dimensional measuring unit 46) and a stored value, then corrective action is taken to

immediately adjust the machining process (e.g. the position of the tool 24) so as to

compensate for the error.

Thus, Locke only discloses looking for the presence of a predetermined Z-axis

position and then initiating real-time monitoring of the output of the dimensional measuring

unit 46 and immediately controlling the tool 24. There is no mention in the passages cited by

the Office Action that the data from the Z-axis position scale 48 and the calculating unit 44 is

recorded. Thus, contrary to the Office Action's assertion, Locke does not disclose the claimed

"recording."

Furthermore, the "recording" feature would not have been obvious over Locke. For

example, if one of ordinary skill were to achieve the claimed "recording," it would be

necessary to modify Locke so as to record the data from the Z-axis position scale 48 in a data

set using a first system and independently record data from the dimensional measuring unit 46

in a different data set using a second system, then combine their data later using time-based

synchronization signals that were used during the recording of the data sets, such that the dimensions of the workpiece at various positions can be determined, and then perform the refining and machining steps after the measuring steps as is recited in the amended independent claims. Not only is this a substantial number of changes, but such changes would go against what Locke teaches which is to "immediately move the cutting tool 24" (see col. 6, lines 39-40) during machining on the basis of the measurement. Accordingly, such a modification would make the system of Locke unsuitable for its intended purpose which is to have immediate feedback control during machining. One of ordinary skill would not have had any reasonable rationale to modify Locke in such a way to render obvious the "recording" feature recited in claims 1 and 13.

II.   The "Independent System" Feature

Claim 1, as amended, recites "a second system, independent to the first system." Amended claim 13 recites a similar feature. Locke does not disclose this "independent system" feature. In particular, in Locke, the Z-axis position scale 48 and the dimensional measuring unit 46 each report to the same system, i.e. the calculating unit 44. This is possible because they are integral parts of the Locke system and hence the calculating unit 44 is geared-up to receive data from both measuring devices. Thus, these measuring devices of Locke are not independent systems.

Also, this "independent system" feature would not have been obvious over Locke. In particular, there is no reason why the skilled person would modify Locke to have two independent recording systems when Locke already comprises a workable configuration of having the Z-axis position scale 48 and dimensional measuring system 46 reporting measurements to the same calculating unit 44.

III.   The "Combining" Feature

Claim 1 recites "combining data from the first and second data sets based on the synchronization signals." Claim 13 recites a similar feature. The Office Action asserts that Locke discloses the "combining" feature. However, contrary to the Office Action's assertion, Locke does not disclose such a "combining" feature.

Page 8 of the Office Action states that "Locke further teaches combining the first data set with the second data set such that each element of the two sets are associated with the same real time or synchronization signal; and outputting the combined data to a further software process which is used to refine the workpiece producing process." The Office Action appears to consider that this is disclosed because: "calculating unit 44 is operative to process the signals fed to it. For example, it compares the information from scale 48 with a table Z-axis dimensions. If there is a match it issues a latch command to read all sensors. If there is a difference it feeds an error signal to summer 45, col. 5, lines 36-41."

However, the Office Action misreads this passage of Locke. This passage of Locke does not disclose combining data. Rather, Locke discloses that the data from the Z-axis position scale 48 is handled quite independently from the data from the other sensors. The latch command is not a time-based synchronization signal; rather it is a signal occurring in response to a specific Z-axis position. Thus, the Z-axis position scale data is merely used to trigger the reading of the other sensors.

In addition, the Office Action assertion is illogical. The Office Action asserts that "Locke further teaches combining the first data set with the second data set," as quoted above. Within the context of this assertion, the Office Action further asserts that Locke discloses comparing "the information from 48 with a table." The Office Action appears to assert that the comparison between the information from 48 with the table corresponds to the

"combining" feature. Based on this, the Office Action appears to assert that Locke discloses comparison (the asserted "combining") of the first data set and the second data set.

However, the element asserted in the Office Action as corresponding to the recited second data set is the information from the dimensional measuring unit 46, not the "table." Thus, even if under the assertion that Locke discloses combining the information from 48 with the content of the table, Locke still does not disclose combining the information from 48 with the information from the dimensional measuring unit 46 (the asserted "second data set"). Thus, the Office Action fails to establish that Locke discloses "combining" the first data set and the second data set, recited in claims 1 and 13.

IV.   The "Synchronization" Feature

As discussed above, claims 1 and 13 recite combining data from the first and second data sets "based on the synchronization signals." The Office Action recognizes that Locke does not disclose synchronization signals. Indeed, as discussed above, the latch command is not a time-based synchronization signal; rather it is a signal occurring in response to a specific Z-axis position.

The Office Action relies on Bieg and Keller to cure the deficiencies of Locke. However, one of ordinary skill would not have had a reasonable rationale to combine the references so as to modify Locke's system with synchronization signals, as discussed below.

In particular, on page 9, the Office Action asserts that the skilled person would do this to improve error handling. However, Locke does not disclose error handling that can be improved with the use of synchronization signals. Indeed, Locke continuously and in real-time receives dimensional measurement data back from the dimensional measurement unit 46, compares the value to a desired value and immediately takes corrective action so as to improve the production of the workpiece. To start introducing the use of time-based synchronization signals would be unnecessary, superfluous and introduce further processing

which could undesirably slow down the real-time feedback control loop. Accordingly, their use would appear to only be disadvantageous. As such, one of ordinary skill would not have had a reasonable rationale to modify the configuration of the Locke system to have synchronization signals.

V.   The Claims Are Patentable

For at least the above reasons, Locke does not disclose or render obvious the subject matter recited in independent claims 1 and 13. Also, one of ordinary skill would not have had a reasonable rationale to combine Bieg and Keller with Locke in the way proposed in the Office Action to render obvious the subject matter recited in claims 1 and 13. Further, Moriyasu does not cure the deficiencies of Locke. Therefore, claims 1 and 13 are patentable over the applied references.

Claims 2-4, 6-11 and 14-16 are each patentable at least in view of the patentability of claim 1, from which they depend, as well as for additional features they recite. Accordingly, withdrawal of the rejection of claims 1-4, 6-11 and 13-16 under 35 U.S.C. §103(a) is respectfully requested.

New claims 17 and 18 are also patentable at least in view of the patentability of claim 1, from which they depend, as well as for additional features they recite.

For example, claim 17 recites that the first data set represents three-dimensional position of the workpiece measurement device and the second data set represents deflection of the workpiece measurement device. On the other hand, the asserted "first data set" in Locke only represents a <u>one-dimension</u> (Z-axis) data. The asserted "second data set" of Locke represents dimensional measurements, not deflection.

Also, Locke discloses real-time inspection of a workpiece. In particular, the Z-axis position scale is only used as a trigger when there is a match, as discussed above. Locke does

not disclose a combined and synchronized data set that includes a time series of deflection and a time series of three-dimensional position, as recited in claim 18.

Claim 19 is patentable for at least the reasons discussed above in connection with claim 1.

VI.   Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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Attachments:
    Petition for Extension of Time
    Request for Continued Examination
    Information Disclosure Statement

Date: October 27, 2010

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